

Endotoxin, (1 --> 3)-beta-D-glucans and fungal extra-cellular polysaccharides in New Zealand homes: a pilot study

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Abstract

Bacterial endotoxin, fungal (1 --> 3)-beta-D-glucans, and extracellular polysaccharides from *Aspergillus* and *Penicillium* (EPS-Asp/Pen) have been suggested to be stable markers of microbial exposure. This paper describes a pilot study in which we measured endotoxin, (1 --> 3)-beta-D-glucans, EPS-Asp/Pen and mite allergen in house dust collected in 32 homes in Wellington, New Zealand. Endotoxin (GM 60,295 EU/g; GSD 2.4) and glucan (GM 2,687 microg/g; GSD 1.5) levels were higher in comparison to previous international studies, whereas EPS-Asp/Pen levels (37,347 Units/g; GSD 1.9) appeared comparable. Concentrations expressed per square meter were highly correlated among the measured components ($p < 0.05$). When expressed per gram of dust only (1 --> 3)-beta-D-glucans and EPS-Asp/Pen were correlated ($r=0.55$, $p < 0.01$; $n=32$). Endotoxin and glucan levels were higher (borderline statistically significant; $p < 0.10$) in homes with self-reported water damage. A positive association ($p < 0.10$) was also found for dust mite and a combination of self-reported mould, dampness and water damage. EPS levels were higher in homes where residents indicated the presence of mould spots on the wall, but this did not reach statistical significance. In conclusion, levels of microbial contaminants in a small random sample of New Zealand homes were high and weakly associated with water damage.

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